ASSESSING DEMOGRAPHIC AND SCHOOLWIDE POSITIVE BEHAVIOR SUPPORT FACTORS THAT PREDICT DISPROPORTIONAL TRENDS IN OFFICE DISCIPLINARY REFERALS

by

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ABSTRACT

Several studies identify inequitable educational outcomes for students from diverse racial, ethnic, and cultural backgrounds. For example, when compared to White/Caucasian students, such students are more likely to be disciplined in school settings. School-wide positive behavior support (SWPBS) is an intervention likely to improve disproportionate distribution of office disciplinary referrals because of its significant contrast to the punitive measures associated with zero tolerance policies. The purpose of this study was to determine the relative predictive value SWPBS has on office referral distribution among school-age students. Results showed that very few SWPBS variables affected disproportional trends in office discipline referrals; however, two state-level variables did moderate the impact on larger schools. Results are discussed in the context of prior research and implications for research and practice.

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CHAPTER I

INTRODUCTION

A large number of studies have identified a variety of inequitable educational outcomes for students from diverse racial, ethnic, cultural, and linguistic backgrounds. Compared to White/Caucasian students, such students are likely to experience higher rates of school dropout, suspension, expulsion and special education referral (e.g., Skiba, Peterson, & Williams, 1997; Vincent & Tobin, 2010; Wallace, Goodkind, Wallace, & Backman, 2008). Research has also reported disproportional trends in office discipline referrals (ODRs; Skiba et al., 2011). In other words, racial/ethnic minority students are sent to the office for behavioral infractions disproportionately more often than White/Caucasian students. This phenomenon has been referred to as the *discipline gap* (Monroe, 2005; Skiba et al., 2011). Similar to the *achievement gap*, which refers to discrepancies in student achievement by students from racial/ethnic backgrounds (McFeeters, 2008), the discipline gap is observed at multiple levels within the educational system (i.e., school, district, state, and national). At each level, racial and ethnic minority students, especially African American students, have been found to be disciplined disproportionately more frequently and severely when compared to White/Caucasians students.

Prior to further discussion, two key terms need to be defined. First, *disproportionality* will refer to the overrepresentation of racial and ethnic minority

students in the context of school-wide disciplinary action (e.g., suspensions, office referrals). Consistent with Harry and Klinger (2006), the term *racial and ethnic minority students* will be used to refer to all students with the exception White/Caucasian students (e.g., African American, Hispanic/Latino, Pacific Islander) because as the authors explain, "the term [minority students] is widely understood in the United States and internationally to imply issues of power that have resulted in the devaluing of racial, cultural, or linguistic features of a group" (p. xiv).

CHAPTER II

LITERATURE REVIEW

Disproportionality: Scope and Severity of the Problem

Differential outcomes in both social and academic behavior for students of racial/ethnic heritage are some of the most consistent findings documented in educational research (e.g., Bradshaw, Mitchell, O'Brennan & Leaf, 2010; Skiba et al., 2008; Skiba et al., 2011). Disproportionality in the context of school-wide discipline is a widespread, long-standing problem only worsening with time (e.g., Krezmien, Leone & Achilles, 2006; Skiba et al., 2008; Skiba et al., 2011). From correctional facilities to the principal's office, the research is clear; you are more likely to find racial and ethnic minority students within these contexts than their White counterparts (Morrison, et al., 2001; Skiba et al., 2011; Wald & Losen, 2003, 2007). It should be noted that these discrepancies have been observed across all racial and ethnic minority groups with the exception of Asian American students, whose performance and rate of referrals are more similar to White/Caucasian students.

Office Discipline Referrals

Office discipline referrals (ODRs) represent a disciplinary action taken in a school. When a student violates a school rule or behavioral expectation, a school staff

member (e.g., teacher, administrator) refers the student to the office. ODRs are important and worth attending to for two main reasons: (a) initial ODRs for *minor* problem behavior (e.g., being disruptive) can be predictive of later *major* behavior violations (e.g., fighting); and, (b) ODRs equate to missed instructional time, thus, affecting academic progress (Kaufman et al., 2010; Irvin et al., 2006; Irvin, Tobin, Sprague, Sugai & Vincent, 2004; Pas, Bradshaw & Mitchell, 2011). In the context of a school-wide prevention model, ODRs can serve as an effective screening measure for these reasons (Irvin et al., 2006; McIntosh, Frank & Spaulding, 2010; Pas, Bradshaw & Mitchell, 2011; Wright & Dusek, 1998). If ODR data are being reviewed continuously, students who are in need of subsequent intervention and/or instruction can be identified in order to correct problem behavior before it worsens and leads to poor social and academic consequences (McIntosh, Frank & Spaulding, 2010; Pas, Bradshaw & Mitchell, 2011).

Recently, studies have reported disproportionate rates and types of ODRs among racial/ethnic minority students (Bradshaw et al., 2010; McFadden & Marsh, 1992; Skiba et al., 2011). For example, Skiba et al. (2011) found discrepancies based on student background at multiple points of the office referral. Teachers sent minority students to the office more frequently and such students were more frequently given a punishing consequence than White/Caucasian students (e.g., in or out of school suspension versus a warning). In addition, Skiba et al. (2002) found there were clear differences in the types of problem behaviors for which students were referred: White students were more often referred to the office for *objective* behaviors (e.g., smoking, vandalism); Black students were more likely to be referred to the office for *subjective* behaviors (e.g., disrespect, excessive noise). The latter are significantly more dependent upon teacher opinion.

Gregory and Thompson (2010) found similar results in one multileveled study where they followed 35 African American students throughout their school day. Black students were much more likely to be referred to the office for "defiant" or "uncooperative" behaviors and teacher perceptions of these behaviors varied significantly.

The Relation between Discipline and Achievement Gaps

The No Child Left Behind Act (NCLB; 2002) sought to address one aspect of disproportionality at the national level. Federal and state governments were seeking to close the academic achievement gap by improving educational outcomes for low-achieving students (Lee, Grigg & Dion, 2007; Lee, Grigg & Donahue, 2007; McFeeters, 2008). Disciplinary actions that remove students from instructional settings and activities affect academic achievement (Ervin, Schaughency, Goodman, McGlichey & Mathews, 2006). Disciplinary actions typically result in lost instructional time. If a student is sent to the principal"s office, a time-out room, or is suspended he or she may miss hours or days of instruction. If a student is expelled from school, he or she is more likely to drop out of the school system entirely, violate the law, and/or become involved with the juvenile justice or prison systems (Wald & Losen, 2003, 2007).

School Exclusions

Exclusions represent both suspensions and expulsions from the instructional setting. Racial/ethnic minority students are disproportionately suspended and expelled from school 2 to 3 times more often than White/Caucasian students (Harvard Civil Rights Project, 2000; Krezmien, Leone & Achilles, 2006; Skiba et al., 2011; Townsend, 2000; Vincent & Tobin, 2011; Wallace et al., 2008). One study evaluated a school

district‟s data and found significant overrepresentation of suspension among African American males across almost every type of behavior violation (Raffaele-Mendez & Knoff, 2003). These trends are of special concern because research has shown that increased suspensions and school expulsion lead to increased chances for special education referral, and ultimately to entrance into the prison system (Morrison et al., 2001; Wald & Losen, 2003, 2007). Thus, similar to overrepresentation of racial/ethnic minority students in school exclusions, overrepresentation is observed in special education referral (Donovan & Cross, 2002; Valenzuela, Copeland, Huaquing Qi & Park, 2006) as well as entrance into juvenile justice and prison systems (McCarthy & Hoge, 1987; Noguera, 2003; Shaw & Bradden, 1990; Townsend, 2000).

The Discipline Gap as a Constitutional Violation

Many leading scholars agree that the issue of disproportionate representation in disciplinary action and related school removal is not in accord with the classic Supreme Court decision Brown versus Board of Education (Blanchett, Mumford & Beachum, 2005; Orfield & Eaton, 1996; Skiba et al., 2011). One of the promises of the Brown decision was to provide all students with equal educational experiences. This promise is at risk of being violated as evidenced by the significant discrepancies in both academic and social behavioral outcomes for racial/ethnic minority students in the school system (e.g., Morrison et al., 2001; Skiba et al., 2008; 2011; Skiba, Paloni-Staudinger, Gallini, Simmons & Feggins-Azziz, 2006).

The research in the above areas indicates a systemic problem with regard to racial and ethnic minority students experiencing more frequent and severe disciplinary action than White/Caucasian students. The problem of disproportionality in school-wide

discipline is long-standing and multileveled. While scholars agree this issue requires further study (e.g., Bradshaw et al., 2010; Skiba et al., 2011) probable solutions remain highly under investigated (Skiba et al., 2008).

Proposed Explanations for Disproportionality

Researchers and writers have proposed various explanations for disproportional student outcomes. Some theories, although popular, have yet to receive much empirical support. Some researchers have recently contributed empirical research results to the literature in this area (e.g., Bradshaw et al., 2010; Gregory & Thompson, 2010; Skiba, Michael, Nardo & Peterson, 2002; Vincent & Tobin, 2010;).

Poverty

One of the more common assumed causes for disproportional representation is poverty. Many assume that since families living in poverty are overrepresented in communities of color, similar overrepresentation in negative school outcomes is to be expected (Donovan & Cross, 2002). Although this belief is widely held in school systems (Harry & Klinger, 2006) it is simply not supported by research (e.g., Donovan & Cross, 2002; Skiba, Poloni-Staudinger, Simmons, Feggins-Azziz & Chung, 2005; Wallace et al., 2008). For example, Skiba et al. (2005) found poverty to be a weak predictor of disproportionate representation in special education. What is more, this study found the best predictor for disproportionate representation to be a school"s rate of suspension and expulsion. Thus, while poverty is commonly used to explain disproportionality, research consistently shows there is not a strong relation between the two (Skiba et al., 2002; 2005; Wallace et al., 2008).

State and School-level Demographic Variables

State-level variables. States vary widely in their ability and efforts in addressing disproportionality (Burdette, 2007; Hebbeler, Spiker, Wagner, Cameto & McKenna, 1999; Markowitz, 2002). For example, while some states actively pursue policy changes and improvement to address issues of disproportionality in both academic and social behavior contexts, other states do not record nor report this type of information (i.e., Markowitz, 2002; Quartz, Barraza-Lyons & Thomas, 2005; Spaulding, Horner, May & Vincent, 2008; Vincent, 2008). Moreover, state and regional trends may impact the frequency and severity of administrative decisions related to discipline (e.g., suspensions, expulsions). For example, Southern states tend to administer suspension more often than other regions (Zhang, Katsiyannis & Herbst 2004). Regional trends such as these, which may influence state policy and practice, could possibly result in different outcomes for racial/ethnic minority students across the country.

School-level variables. School-level demographic variables (i.e., student racial/ethnic composition) have been shown to significantly predict disproportional student outcomes (Lyons, 2004; Sutton & Soderstrom, 1999). For example, school location (i.e., city size; urban, suburban) is associated with several differing school attributes. Urban schools tend to: (a) have less qualified and less experienced teachers (Lankford, Loeb & Wyckoff, 2002; Quartz, Barraza-Lyons & Thomas, 2005); (b) poor reputations (Hampton, Peng & Ann, 2008) and, (c) higher teacher turnover (Ingorsoll, 2004; Planty et al., 2008). Since these schools (i.e., urban schools) also tend to have significantly more racial/ethnic minority students, school demographics (i.e., school

location) are also likely to predict differential student outcomes for racial/ethnic minority students.

Differential Rates of Problem Behavior

Previous research has shown that even when racial/ethnic minority and White/Caucasian students are observed to have the same rate of problem behavior, racial/ethnic minority students still experience more frequent and severe disciplinary action than their White classmates (McCarthy & Hoge, 1987; Skiba et al., 2002). After testing several hypotheses for minority student overrepresentation in school discipline, Skiba et al. (2002) concluded, "discriminant analyses by race reveals no evidence that racial disparities in school punishment could be explained by higher rates of African American misbehavior (p. 334)."

Ineffective response to problem behavior in schools. Noguera (2003) writes:

> As we came to the end of the tour and walked toward the main office, the assistant principal shook his head and pointed out a boy, no more than 8 or 9 years old, standing outside the door to his office. Gesturing to the child, the assistant principal said to me „Do you see that boy? There"s a prison cell in San Quentin waiting for him." Surprised by his observation, I asked how he was able to predict this future of such a young child. He replied „Well, his father is in prison, he"s got a brother and an uncle there too…I can see from how he behaves already that it"s only a matter of time before he ends up there too." Responding to the certainty with which he made these pronouncements, I asked „Given what you know about him, what is the school doing to prevent him from going to prison?" (p. 341)

As Noguera (2003) explains, schools reflect societies which make it likely we will see similar problems in schools as we do in society. He further describes common school logic, which assumes we (as school systems) should separate the "good apples from the bad." In other words, schools insist that students who do not follow the rules (i.e., "abide by the law") should be removed from the educational setting. This process of projecting

inherent beliefs about punishment and society is often unconscious and can only be changed by challenging beliefs and re-evaluating the purpose of education (Noguera, 2003). As the author suggests at the end of the vignette, it is the school's responsibility to teach students how to be successful at school and in society. Yet ineffective school response to problem behavior, which may include a variety of reactive and punitive measures, is common practice in many schools. One such approach to managing problem behavior is referred to as *zero tolerance*.

Zero tolerance policies. Zero tolerance policies stem from the federal drug-enforcement policy and seek to send a message by punishing all major problem behavior with harsh consequences (Skiba, 2000). Program evaluation research on zero tolerance policies has shown: (a) an increase in suspensions and expulsions (Skiba 2000; Skiba & Rausch, 2006); (b) a misuse and possible abuse of disciplinary procedures (Harvard Civil Rights Project, 2000; Keleher, 2000); and, (c) a larger discrepancy in disciplinary actions between racial/ethnic minority students and White/Caucasian students (Keleher, 2000; Monroe, 2005; Noguera, 2003; Skiba & Peterson, 2000; Vavrus & Cole, 2002). A task force convened by the American Psychological Association (2008) sought to explore the issue further and provide recommendations, concluded the following:

> [D]espite a 20-year history of implementation, there are surprisingly few data that could directly test the assumptions of a zero tolerance approach to school discipline, and the data that are available tend to contradict those assumptions. Moreover, zero tolerance policies may negatively affect the relationship of education with juvenile justice and appear to conflict to some degree with current best knowledge concerning adolescent development (p. 852).

As noted by several scholars, zero tolerance policies have shown to be an ineffective response to problem behavior in schools and have only widened the previously existing

discipline gap in schools across the country (Harvard Civil Rights Project, 2000; Keleher, 2000).

Differential Teacher Behavior

Differential treatment patterns of racial/ethnic minority students by teachers and administrators have been observed and discussed at length by researchers (e.g., Harry & Klinger, 2006; Skiba et al., 2002). As previously mentioned, African American students are referred to the office more frequently and receive harsher punishments for the same behavior violations as White/Caucasian students. What is more concerning, when asked about teacher bias or stereotyping, respondents (e.g., teachers) often resist discussion of the issue which indicates a lack of awareness and/or acknowledgement of their possible differential treatment towards racial/ethnic minority students (Skiba et al., 2006; Skiba, Simmons, Ritter, Kohler & Wu, 2003). As previously mentioned, Gregory and Thompson (2010) have recently contributed additional evidence supporting this explanation. As these results explain, the student‟s perception of a teacher‟s ability to act "fairly" greatly affected whether or not the African American student was disciplined (Gregory & Thompson, 2010).

Lowered teacher expectations. Teacher expectations are often considered one of the strongest predictors of student achievement (Brophy, 1988). Research has shown that teachers frequently have lower expectations for minority students (Farkas, 2003; Tenenbaum & Ruck, 2007) and these expectations may be related to lower student outcomes (Good & Nichols, 2001; McCarthy & Hoge, 1987). Many authors have concluded this phenomenon can and should be considered racial discrimination (Gordon, Della Piana, Keheler, 2000; Harry & Kinger, 2006; Washington, 1977). Racial

stereotypes about students‟ families have also been shown to influence teacher behavior (Harry & Kinger, 2006). As Harry (2008) explains, teachers‟ negative perceptions of families make it particularly difficult to collaborate effectively. Since teacher expectations are a predictor of student outcomes and teacher expectations tend to be lower for racial and ethnic minority students, it is likely that teacher expectations also contribute to the disparities in school-wide disciplinary action.

Poor classroom management. Another teacher variable which can influence the frequency and severity of problem behavior in the classroom is a teacher‟s use of effective classroom management strategies. Harry and Klinger (2006) report several observations which depict this type of "passive" classroom management in which the entire class becomes off task and defiant. Here, they describe one of their observations and note that the target student for observation, "Kanita," quickly changes her demeanor when placed in a classroom with effective classroom management:

> The first-grade teacher was Ms. E…[who was] practicing "passive" classroom management. The first time we observed her class it was obvious that she made next to no effort to intervene in early signs of misbehavior and typically did not respond to it until it was nearly out of control….In contrast, Kanita‟s quick perception that good behavior was required in the EH class resulted in immediate change in her behavior. (p.149-150)

As previously noted, if racial/ethnic minority students are more likely to have less experienced and less qualified teachers, then teacher behaviors, such as the use of classroom management strategies, would likely be a contributing factor to the problem of disproportional office referrals among racial/ethnic minority students.

Cultural Influences

A variety of cultural factors may also contribute to the disproportionate representation we observe in schools (Gay, 2002; Skiba et al., 2006). The term *culture* refers to racial, ethnic, religious and socioeconomic influences on human behavior. First, there are clear differences between majority (i.e., White/Caucasian) and racial/ethnic minority cultures. Boykin, Tyler and Miller (2005) observed teacher and student behaviors and found that their behaviors (including speech and gestural patterns) aligned with their corresponding cultural backgrounds (mainstream or Afro-cultural ethos). Additional studies have noted that African American students seek to please the teacher while White students are more concerned with gaining approval from parents (e.g., Casteel, 1997). If teachers are unaware of cultural differences and/or appear to lack acknowledgement of students‟ cultural backgrounds, teachers lack the reflective and thoughtful process necessary to successfully teach racial/ethnic minority students. Some of the most prominent of these cultural factors are discussed in more detail below.

Cultural differences and misunderstanding. According to the U.S. Department of Education (2007), for the past 10 years, U.S. teachers have remained White (by over 80%) and female (by over 80%) while student populations have become increasingly diverse. For example, Ellen, O‟Regan and Conger (2008) report that the nation‟s largest school district has experienced rapid changes in student demographics including an increase in student immigration status. While some teachers and school systems are responding positively to increased student diversity (e.g., Evans, 2007; Harry & Klinger, 2006), Skiba et al., (2006) says that the majority of teachers feel unprepared to meet the needs of students from a variety of backgrounds. As Skiba et al. (2006) explains,

"Classroom behavior appears to be an especially challenging issue for many teachers, and cultural gaps and misunderstandings may intensify behavioral challenges" (p. 1424). This finding is echoed in this observation noted by Delpit (2006). She writes:

> A twelve-year-old friend tells me that there are three kinds of teachers in his middle school: the black teachers, none of whom are afraid of black kids; the white teachers, a few of whom are not afraid of black kids; and the largest group of white teachers, who are *all* afraid of black kids. It is this last group that, according to my young informant, consistently has the most difficulty with teaching and whose students have the most difficulty with learning. (p. 168)

As noted in the previous excerpt, some White teachers may demonstrate a knowledge and comfort in working with students different from themselves. Cultural misunderstanding may occur when (a) the teacher lacks student background knowledge, (b) the teacher lacks self-awareness on his/her own cultural awareness or (c) the teacher lacks both (Schumann & Burrow-Sanchez, 2010). For example, a teacher who is unaware of Native American students' tendency to look downward in order to show respect would insist that the student show her respect by looking directly into her eyes. Cultural misunderstanding about what "respect" looks like, as described in the previous example, may lead to higher rates of poor student outcomes (i.e., office referrals for "disrespect") among racial/ethnic minority students (Cartledge & Kourea, 2008; Kaufman et al., 2010). On the other hand, one recent study found that even when student and teacher racial/ethnic background matched, African American students continued to be over-referred to the office for discipline (Bradshaw et al., 2010).

Societal and self images. Students' negative self-image, created from stereotypes, has also been shown to influence school performance for racial/ethnic minority students (Aronson, 2004). For example, societal images that depict African American males as criminals may contribute to these negative stereotypes (Ferguson,

2001; Monroe, 2005). As Schmader, Major and Gramzon (2001) explain, negative stereotypes affect psychological engagement in some racial/ethnic minority students. Specifically, they found that academic engagement for African American students tends to be more influenced by their perception of ethnic injustice. On the other hand, White students‟ academic engagement is more influenced by their academic performance. In other words, if African American students believe they are being differentially treated by their teacher (or perceive any form of racial injustice), they are more likely to become disengaged in the school community (Gregory & Thompson, 2010; Schmader, Major & Gramzon; 2001).

Research also supports the idea that student perceptions of "acting White" and "acting Black" contribute to student discrepancies in school behavior. Specifically, students attribute positive school behavior to "acting White" and in contrast, perceive "acting Black" associated with low intelligence and school achievement as well as negative school behavior and attitudes (Ford, Grantham & Whiting, 2008). Thus, if Black students are socially reinforced to perform below expectations in order to further differentiate themselves from White students, these societal images along with perceived racial injustice (i.e., inconsistency in school-wide discipline procedures) would also lead to disproportionate representation in office referrals.

In response to an apparent national trend of discipline discrepancies among racial/ethnic minority students and their White/Caucasian peers, numerous explanations have evolved. While poverty is a common response to the problem, it lacks empirical validation as numerous studies have shown the problem of disproportionality exists despite poverty. Several hypotheses that are most likely to be predictive of the discipline

discrepancies involve cultural misunderstanding, differential teacher behavior and ineffective responses to problem behavior.

Culturally Responsive Practice: Embracing Student Diversity

Rather than approach the increased student diversity as a "problem" (e.g., Campbell, 2001; Zhou, 2003) scholars encourage the integration of culturally responsive practice to embrace the diverse range of student backgrounds represented in our schools (e.g., Cartledge & Kourea, 2008; Gay, 2000). Gay (2000) defines *culturally responsive teaching* as the use and incorporation of students" cultural values and identities. She further asserts that in order to achieve academic success with racial/ethnic minority students" teachers must incorporate culturally responsive practice into their curriculum, instruction, and classroom environments. Finally, Gay (2000) emphasizes the importance of demonstrating a sense of care for all students by building relationships with students and families. Teachers who can foster this sense of care with their family and student relationships, integrate differences of culture into the curriculum and communicate effectively will have more success in achieving positive outcomes for racial/ethnic minority students (Gay, 2000).

Research supports the use of culturally responsive practices to improve outcomes for racial/ethnic minority students (Banks, et al., 2005; Obiakor, 2007; Richards, Brown & Forde, 2007; Vaughn, 2004). First, teachers must have a comprehensive understanding of culture (their own, their students, etc.) in order to cultivate and utilize culturally responsive practices (Kozleski, Sobel & Taylor, 2003). Teachers who are aware of their students" cultural backgrounds (as well as their own) can then integrate this information into instruction and classroom activities. Teachers who engage in this ongoing reflective

process are more likely to effectively facilitate social and academic behavioral competence (Cartledge & Lo, 2006; Love & Kruger, 2005). For example, a teacher may spend time getting to know her students‟ families and learn that a family within her class celebrates Kwanzaa in place of the mainstream Christmas holiday traditions. Some ways in which this teacher may incorporate the student‟s background into the classroom are by (a) learning about the history and importance of celebrating Kwanzaa for African Americans, (b) talking about the principles of Kwanzaa or *Nguzo Saba* and/or (c) having the family come in to the class and share Kwanza-related activities.

Another key feature of culturally responsive practice involves creating safe classroom environments by teaching tolerance and respect for student differences (Gay, 2000). For example, a teacher would confront racist attitudes and beliefs by speaking openly and directly with students when they show cultural disrespect towards one another (i.e., when a White child refuses to hold a Black student‟s hand because they say “it‟s dirty”). Students agree: culturally responsive practices are preferred. A qualitative study sought students‟ perspective on the matter and found that African American students preferred (a) teachers who showed care and kindness, (b) created a strong community-oriented classroom and (c) made learning fun and engaging (Howard, 2001). In sum, racial/ethnic minority students are more successful in school when cultural differences are acknowledged, embraced and respected within the educational environment.

SWPBS as an Effective Intervention for Racial/Ethnic Minority Students

School-wide positive behavior support (SWPBS) is a proactive, preventative approach to addressing problem behavior in schools (e.g., Carr et al., 2002; Lewis & Sugai, 1999; Sugai & Horner, 2002) and is currently implemented in elementary, middle

and high schools across the country (Spaulding et al., 2008; Sugai & Horner, 2002). Some of the positive outcomes associated with SWPBS at the universal level include the following: (a) decreased problem behavior; (b) increased academic achievement; (c) improved school safety; and, (d) improved school climate (e.g., Bohanon et al., 2006; Kartub, Taylor-Greene, March & Horner, 2000; Muscott, Mann & LeBrun, 2008; Sugai & Horner, 2008; Tobin & Sugai, 2005). Furthermore, SWPBS involves team-based and data-based decision making to design effective school environments to effectively prevent and respond to problem behavior.

SWPBS, a positive system of behavioral support, is organized into a three-tiered continuum. At the universal level (Tier 1), school-wide supports involve defining and teaching clear behavioral expectations (Sugai & Horner, 2008). If done well, SWPBS-universal level support effectively prevents most students from violating behavior expectations. For example, with clear positive and punitive consequences, most students will never require an office referral. At the secondary level (Tier 2), students who require some additional (yet not intensive) supports may be referred for additional intervention (e.g., Behavior Education Program; Crone, Hawken & Horner, 2010). Finally, at the tertiary level (Tier 3), students who display severe or violent behaviors are supported with intensive and individualized interventions (Sugai & Horner, 2008).

SWPBS universal level supports have consistently resulted in positive outcomes for schools across the country, and recently, researchers have discussed the incorporation of culturally responsive practices within SWPBS (Cartledge & Kourea, 2008; Duda & Utley, 2005; Utley, Kozleski, Smith & Draper, 2002; Vincent, Randall, Cartledge, Tobin, Swain-Bradway, 2011). Several core components of SWPBS could be qualified as

culturally responsive practice, and moreover, are likely to address some of the primary causes of disproportionality described in previous sections. Some of these aspects of SWPBS at the universal level include an emphasis on positive relationships, effective prevention of and response to problem behavior, and data-based decision making.

Emphasis on Positive Relationships

Part of SWPBS implementation involves increasing the frequency of positive feedback to students regarding their social behavior (Luiselli, Putnam & Sunderland, 2002). This in turn can contribute to an overall improved school climate in schools. This improved school climate can be especially helpful for racial/ethnic minority students as positive school climate has been shown to improve antisocial behavior for racial/ethnic minority students (LeBlanc, Swisher, Vitaro & Tremblay, 2008) as well as facilitate social behavioral development for some students (Murray & Greenberg, 2006). Another study reported that positive student-teacher interactions significantly predicted school adjustment for low-income minority students (Esposito, 1999). Thus, positive school climate and student-teacher interactions may be especially beneficial for racial/ethnic minority students‟ prosocial behavior.

Effective Prevention of and Response to Problem Behavior

Clear behavior expectations. Another critical component of SWPBS is the direct and explicit teaching of behavioral expectations (Sugai & Horner, 2008). In theory, students from a diverse range of cultural backgrounds vary in their perspectives on social behavior expectations. One such school expectation that may differ from home expectations is the amount and level of physical contact students think is appropriate to

exhibit with one another (e.g., hugging, "rough housing"). If staff members have made a concerted effort to explicitly state, demonstrate, and practice what is expected at school, this would ensure that *all* students are aware of school expectations (regardless of cultural background; Cartledge & Loe, 2001).

Effective classroom management. One of the primary "systems" of SWPBS implementation is implemented in the classroom. In other words, in contrast to the "passive" classroom management style previously described by Harry & Klinger (2006), SWPBS fosters effective classroom systems where teachers practice preventative systems of behavioral support. What is more, classroom management strategies have lead to many positive student outcomes including the reduction of office referrals, suspensions, and referrals to special education (e.g., Skiba, McLeskey, Waldron & Grizzle, 1993; Sugai & Horner, 2008).

Consistent consequences. SWPBS encourages consistent consequences for appropriate and problem behavior. Research described above supports the idea that negative self-images and perceived differential treatment from school staff may lead to poor social outcomes for racial/ethnic minority students (e.g., Gregory & Thompson, 2010). Research reports also indicate racial/ethnic minority students misbehave on average, at the same rate as White students; therefore, if consequences are administered consistently (as emphasized within SWPBS), racial/ethnic minority students should experience disciplinary consequences at similar rates as White students.

Data-Based Decision Making

SWPBS promotes data-based decision making to detect problematic trends and identify areas and students in need of support and intervention (Sugai & Horner, 2008).

ODRs can be used to measure school climate, monitor school-wide behavior interventions and supports and identify areas of need throughout the school (Irvin et al., 2004; Putnam, Luiselli, Handler & Jefferson, 2003). ODRs may serve as an effective screening measure (Tobin & Sugai, 1996) and method for progress monitoring (Fairbanks, Sugai, Gaurdino & Lathrop, 2007; Hawken, MacLeod & Rawlings, 2007; Irvin et al., 2006; McIntosh, Frank, Spaulding, 2010). One such system which facilitates using data for decision-making purposes is the School-wide Information System (SWIS; May et al., 2003). SWIS is a web-based program which organizes and summarizes office discipline referrals and allows schools to easily create reports (i.e., graphs) to be used for decision making at the individual, classroom, and school level. Instead of relying primarily on teacher and administrator subjectivity, SWPBS promotes the use of objective data to facilitate the decision making process. For example, if a school team used SWIS to generate a report of ODR rates across racial/ethnic status and teacher referral, the team could identify and intervene with teachers‟ that have a tendency to refer Black students to the office more frequently than Whites students. As a result, staff bias is likely to be minimized and students‟ perception of fairness is enhanced; thus, possibly increasing the likelihood of improved outcomes for racial/ethnic minority students.

Case Studies

While SWPBS research is somewhat limited in the context of outcomes for racial/ethnic minority students, some case studies have explored ways in which culturally relevant practices can be incorporated into SWPBS. For example, studies have described SWPBS implementation and outcomes in a school with a high proportion of Native American students (Jones, Caravaca, Cizek, Horner & Vincent, 2006) as well as in the

context of large urban elementary and secondary school settings and found that positive outcomes were similar to national trends (Bohannon et al., 2006; Kaufman et al., 2010). In addition to the typical SWPBS implementation process, these case studies emphasized culturally responsive practice by promoting awareness and understanding of cultural differences (i.e., when teaching school-wide expectations) and creating kind and caring classroom environments (i.e., by using positive strategies for preventing problem behavior). These case studies have demonstrated SWPBS at the universal level naturally lends itself to the integration of culturally responsive practice (Cartledge & Kourea, 2008; Vincent et al., 2011) as both SWPBS and culturally responsive practice encourage "contextual fit" with each unique school environment.

Initial Research on SWPBS and Disproportionality

While SWPBS research has demonstrated effective overall reductions in problem behavior in schools, disaggregated data demonstrating the nature and degree to which this reduction has benefited racial/ethnic minority students are limited. Preliminary data indicates a possible relation between proportional ODR reduction and SWPBS implementation. As an example, Vincent, Cartledge, May, and Tobin, (2009) found that elementary schools that had shown overall reductions in major ODRs also demonstrated reductions across almost all racial/ethnic minority groups. However, this study was limited in that it involved only elementary schools and only analyzed ODRs involving major problem behaviors. While this study offers a valuable contribution in the exploration of such a relationship between SWPBS and disproportional ODRs, future research needs to involve a more comprehensive and in depth analysis to investigate the

potential relationship between SWPBS and improved outcomes for racial/ethnic minority students.

As mentioned previously, there may also be important school and state-level predictive variables; none of which have been included in analyses reported thus far (e.g., Kaufman et al., 2010). Such analyses could demonstrate significant influences on outcomes (e.g., Artiles et al., 2005). For example, school level demographic variables that have shown to significantly influence ODR rates include (but are not limited to): school size (Spaulding & Frank, 2009a); school grade levels (Vincent, Horner & May, 2009); and school location, (Spaulding & Frank, 2009b). In addition, previously mentioned regional and state differences in SWPBS policy and practice (i.e., variance in working definitions of disproportionality) could also differentially impact disproportional rates of ODRs across schools (Burdette, 2007).

While preliminary studies have provided some evidence of a relationship between SWPBS implementation and reduced ODRs across racial/ethnic minority students, further analysis linking specific SWPBS universal level supports (as measured by the Schoolwide Evaluation Tool (SET); Horner et al., 2004) with ODR reduction has yet to be analyzed. Moreover, while a general reduction of ODRs has been observed across most racial/ethnic student groups, various recommended procedures for identifying disproportionality in school-wide discipline (e.g., relative risk ratio) were not employed in previous studies (Skiba et al., 2008). The proposed study will compare the relative predictive value of school-level demographic and SWPBS implementation variables on ratios of ODRs across various racial/ethnic student groups.

Research Questions

1. Do schools that implement SWPBS reduce ODR rates over time?
2. Do schools that implement SWPBS have more proportional risk ratios among racial/ethnic minority (as compared to White) students over time?
3. To what extent do school demographic factors (i.e., school size, location) predict proportionate (or disproportionate) rates of office referrals among racial/ethnic minority students?
4. To what extent does school-wide positive behavior support (SWPBS) implementation (i.e., years of SWPBS implementation) predict proportionate (or disproportionate) rates of office referrals among racial/ethnic minority students?
5. To what extent does SWPBS predict proportionate (or disproportionate) rates of office referrals among racial/ethnic minority students *above and beyond* school demographic factors?

CHAPTER III

METHOD

Setting and Participants

This study utilized existing data sources collected from elementary, middle and high schools across the United States. Schools included in this study submitted data to each of the following three data systems: (a) the School-Wide Information System (SWIS); (b) the National Center for Educational Statistics: Common Core of Data (NCES); and (c) an online data system monitored by the National Technical Assistance Center for Positive Behavior Interventions and Supports (TA-Center; pbssurveys.org). Additional selection criteria for each school included: (a) data use and entry into each of the three databases for a minimum of 3 consecutive years; (b) completed and signed permission forms for data use on file at the University of Oregon; (c) K-12 schools within the United States not including alternative settings (i.e., residential treatment facilities); and (d) sufficient data entry (i.e., schools which had 50% of data missing were not included). Therefore, although nationally distributed, the sample discussed here is self-selected rather than randomly selected which presents various limitations in the interpretation of results (Fowler, 2009; Singleton & Straits, 2005).

When this study was conducted there were approximately 14,000 schools implementing SWPBS internationally (www.pbis.org). However, the present study utilized data only from schools within the U.S. that had submitted data for 3 consecutive

years to each of the three databases listed above. Therefore, the sample size was limited to 624 schools. Schools included were located in 17 of the 50 United States. Approximately 60% of the schools were elementary (K-6); 30% were middle school (grades 6-9) and 10% were high schools (9-12). Data from private or alternative school settings were not included. As mentioned above, all participating schools entered the information into these national data bases on a voluntary basis, thus selection bias is an inherent limitation of the present study and is discussed in greater detail in subsequent chapters.

Data Sources

School-wide Information System

The web-based School-wide Information System (SWIS; May et al., 2003) allows schools to enter and organize office discipline referral (ODR) information. When this study was conducted, there were approximately 6,300 elementary, middle and high schools utilizing this discipline-tracking program (http://www.swis.org/). In nearly every state across the U.S., schools have purchased access to the system, received training and are using it in order to effectively and efficiently summarize data and make decisions about supports for problem behavior in their school settings (Spaulding, Horner, May & Vincent, 2008). The SWIS system was designed for and is most commonly used in conjunction with a School-wide Positive Behavior Support (SWPBS) initiative (May et al., 2003). Outcome variables that were generated from SWIS and included in the present study were: (a) office referrals and (b) student demographic information.

Office referrals represent a behavior infraction either for minor (i.e., running in the hallway) or major problem behavior (i.e., starting a fight). When a school commits to

using the SWIS data collection system for tracking problem behavior in their school, office staff agrees to enter disciplinary referrals when students arrive at the office. Along with entering the student"s name (coded for confidentiality purposes) and the behavior infraction details (i.e., when and where it occurred); the office staff should also enter the student"s demographic information (e.g., gender). The primary student demographic variable included in this study was the student"s racial/ethnic background (e.g., African American). The eight options available for racial/ethnic background within SWIS are: (a) Native, (b) Asian, (c) Latino, (d) Black, (e) White, (f) Not Listed, (g) Unknown, and (h) Pacific Islander. While NCES and the U.S. Census Bureau have recently revised their demographic categories, these categories reflect the data available from these databases.

Although this feature within SWIS is highly underutilized, SWIS schools are beginning to record and track student racial and ethnic background in an effort to examine data for possible racial inequities (Vincent, 2008). This study investigated minority populations that represent the two largest student groups within the country, which are African American and Latino/a student groups (e.g., Skiba, 2008). Therefore, research questions focused on Latino and Black student populations when compared to White/Caucasian students. Due to their low and inconsistent numbers, remaining minority student groups (i.e., Native American, Pacific Islander) were not included in this study.

For precision purposes, two different student groups were formed and their data were compiled and analyzed separately. To this extent, all research questions were investigated separately for each student group. Each analysis was conducted twice so that results could be specific for each student group. As Skiba et al. (2011) and others

have found, results for Black and Hispanic students often vary so analyzing the data separately allowed for this precision. In all, 493 schools (representing 17 states) were included for the Hispanic student group while 382 schools (representing 15 states) were included for the Black student group. Results and discussion are presented separately for each student group in subsequent chapters.

National Center for Educational Statistics

The Common Core of Data is one survey within the National Center for Educational Statistics (NCES) database. Similar to Vincent, Horner and May (2009), 3 consecutive academic school years of data for each participating school were retrieved from the Common Core dataset and merged with the SWIS database in order to provide a portion of the school-level demographic information needed. The variables reported annually in this database included: (a) number of students enrolled in the school; (b) school location; and, (c) school demographic information as described in the next paragraph (Spaulding & Frank, 2009a). Student enrollment and school location were used and coded as continuous variables. School location was coded according to population size of the residing city (See Table 1).

Additional school-level demographics included (a) percentages of minority student enrollment, and (b) percentage of students who qualify for free and reduced lunch. Since regional trends among states have been noted in previous SWPBS studies (Spaulding, Horner, May & Vincent, 2008), state region (i.e., Midwest, West, East, South) was included as a state-level variable and can be described using the U.S. Census Bureau regions (2011; Table 2).

Table 1: *School Location Codes*

Descriptor	Population Size
Large City	> = 250,000
Midsize City	< 250,000
Urban Fringe of Large City	As decided by US Census
Urban Fringe of Midsize City	As decided by US Census
Large Town	> = 25,000
Small Town	< 25,000
Rural, outside CBSA	As decided by US Census
Rural, inside CBSA	As decided by US Census

Online SWPBS Data System

Finally, the National Technical Assistance Center for Positive Behavior Interventions and Supports (TA-Center) collects data from all states twice each year (Spaulding, Horner, May & Vincent, 2008). These data include information related to the implementation of SWPBS within each state. School-level SWPBS implementation variables from this system (www.pbssurveys.org) included in the data analysis for each school were: (a) number of years in SWPBS implementation; (b) implementation scores as measured by the School-wide Evaluation Tool (Sugai, Lewis-Palmer, Todd & Horner, 2001), which is described below. While all SWIS schools implementing SWPBS are invited to enter this information into pbs.surveys annually, only approximately 20% of SWIS schools consistently enter this information. In addition, state-level demographic and SWPBS information were also provided via the TA-Center evaluation reports. The data used from this public domain included: (a) percentage of schools implementing SWPBS and (b) percentage of schools utilizing the ethnicity report available via SWIS (Spaulding et al., 2008; Vincent, 2008).

The Schoolwide Evaluation Tool (SET; Sugai et al., 2001) was developed, in part, to measure implementation fidelity of SWPBS at the universal level (Horner, 2004). As

Table 2: *U.S. Census Bureau Regions*

Region 1: *Northeast*	**Region 2:** *Midwest*	**Region 3:** *South*	**Region 4:** *West*
• Connecticut • Maine • Massachusetts • New Hampshire • New Jersey • New York • Pennsylvania • Rhode Island • Vermont	• Illinois • Indiana • Iowa • Kansas • Michigan • Minnesota • Missouri • Nebraska • North Dakota • Ohio • South Dakota • Wisconsin	• Alabama • Arkansas • Delaware • District of Columbia • Florida • Georgia • Kentucky • Louisiana • Maryland • Mississippi • North Carolina • Oklahoma • South Carolina • Tennessee • Texas • Virginia • West Virginia	• Alaska • California • Hawaii • Oregon • Washington

shown in Table 3, the SET measures critical implementation features of SWPBS-universal level supports by assessing the extent to which SWPBS is in place at a given school. The SET is comprised of direct and indirect observation methods as well as permanent product evaluation. There are seven subcomponents and each of these SET subcomponents receives a percentage score. Following this, all scores are averaged to derive the average total implementation percentage score. A research-based 80/80 criterion has been established to indicate that schools are implementing SWPBS with fidelity at the universal level (May et al., 2004). One criterion is that schools must receive 80% or above on the first two subcomponent scores (i.e., Expectations Defined and Expectations Taught) and receive 80% or above on their average total score for the SET. Both of these scores were entered into the statistical analysis.

Table 3: *School-wide Evaluation Tool (SET)*

SET Subcomponents	Essential Features of Sub-Components
Behavior Expectations Defined	• Expectations positively stated and clearly defined • Expectations posted throughout the building
Behavior Expectations Taught	• Staff have taught the expectations • Students and staff identify expectations
System for Rewarding Behavior	• Documentation and consistent delivery of rewards system
System for Responding to Behavioral Violations	• Staff and administration agree on office referral-warranted behaviors • Crisis management plan in place
Monitoring and Decision-Making	• Representative team meets to discuss school behavioral data and revises plan as needed • Consistent data collection and use • Adequate information is collected upon behavioral violation
Management	• Administration is an active participant in school-wide behavioral plan • Appropriate funding is allocated • Ongoing communication with staff
District-level Support	• District-designated funds and liaison

Adapted from School-wide Evaluation Tool (Sugai et al., 2001)

Measurement

Dependent Variables

Dependent variables included (a) overall ODR annual totals for each year at each school and (b) the ratio of ODRs within student racial/ethnic populations per school per year. ODRs are one of the primary ways in which schools monitor progress towards reducing problem behavior. The relative *risk ratio* is the recommended approach for examining disproportionality in school-wide discipline (Skiba et al., 2008).

When a school tracks ODR data using the SWIS system, they commit to entering the data into the database at the point of referral for problem behavior. Since SWIS is an

international web-based data system, the ODR data are automatically entered into the larger database housed at the University of Oregon. The present study used the annual total of office referrals by student racial/ethnic group (i.e., White students) as the numerator in the larger equation of risk ratio for each school included in the study (see Figure 1). This dependent variable is an estimation of relative proportion in ODRs for various student ethnic/racial groups. Although there are several ways to calculate this proportion (e.g., composite index, odds ratio), recently experts have encouraged the use of *risk ratio* (or *relative risk ratio*) when the sample size is relatively large (Skiba et al., 2008). Relative risk ratio is calculated by comparing the minority group of interest (e.g., African American students) to the majority group (e.g., White/Caucasian students) in the form of a ratio (e.g., Skiba et al., 2008).

For example, a score of 2.34 would mean that African American students are more than twice as likely to be referred to the office as White/Caucasian students. This equation will be calculated for each school for each year and only for the Latino/a and Black student populations. Although a derived score from annual ODRs and student demographics, the log of the risk ratio calculation for each school for each year is considered the outcome variable for the present study.

$$\frac{\text{Number of office referrals among *Latino/a students}}{\text{Total number of *Latino/a students at the school}}$$

$$\frac{\text{Number of office referrals among White students}}{\text{Total number of White students}}$$

Same calculation conducted for each racial/ethnic minority group of students.

Figure 1: *Relative Risk Ratio Calculation*

Independent Variables

Independent variables were grouped in two different ways. First, as recently described, variables were grouped by either demographic (e.g., school and state location, percentage of minority students) or SWPBS variables (e.g., SET scores, number of years with SWPBS implementation at school and state levels). The independent variables were also grouped according to the level of data they represent (see Table 4). At the first level of analysis, measurement occasion (the corresponding year for each measurement event) included the academic year. Next, the school-level variables were added to Level 2 equations to determine how each set of variables (i.e., SWPBS and school demographics) influenced the risk ratios. Finally, at the state level, the following variables were included in the analysis: (a) percentage of SWPBS schools within the state (b) number of years with SWPBS implementation, and (c) region within the United States.

Procedures

Each of the three of database sources (i.e., SWIS, www.pbssurveys.org and NCES) were housed and monitored by the National Technical Assistance Center for Positive Behavior Support. Each of these schools agreed to provide the TA-Center access to the required data. In order to acquire data from these sources, one must submit a user registration request to the National PBIS TA-Center housed and operated by the University of Oregon. Once approved, both parties sign a data use agreement and data are uploaded via a secured Intranet site. The complied data set remains available for download for up to 1 year and remains at the University of Oregon for a period up to 7 years.

Table 4: *Independent Variables by Level of Analysis*

Level of Analysis (within HLM)	Independent Variables
Level 1 *Measurement Occasion*	• Academic Year (Time)

Level 2
School
	• Demographic Information
	  ○ Student racial/ethnic composition
	  ▪ Percentage of non-white students at the school
	  ○ School SES
	  ▪ Percentage of students who qualify for free and reduced lunch
	  ○ School size
	  ○ School location
	  ▪ City size (See new US Census/NCES codes)
	  ○ School grade level
	  ▪ Elementary
	  ▪ Middle
	  ▪ High
	  ▪ Other (K-8 or K-12)
	• *SET Scores
	  ○ Implementation Average
	  ○ 80/80 Criterion Met
	  ○ SET subcomponent scores

Level 3
State
	• *SWPBS Policy/Practice
	  ○ Percentage of schools implementing SWPBS
	  ○ Percentage of schools utilizing ethnicity report within SWIS
	• Region within U.S. (i.e., Midwest, Northeast)

**Indicates SWPBS variables; othersrepresent demographic variables.*

Data Analysis

The analysis began by testing the major assumptions of parametric tests (such as normality). Following this, necessary transformations remedied any violation of the major assumptions (described below). Once the data met the standard assumptions, the data was uploaded into the HLM software program. Please note "HLM" refers to both a statistical software *program* as well as a statistical analysis *procedure*. What is more, the HLM software program assists researchers in conducting an HLM analysis procedure.

Here, the modeling continued until the error term was reduced as much as possible and only significant variables remained in the model. In the end, the final regression equation (or several regression equations; explained below) yielded the *relative predictive value* each variable has on the outcome variable (for *each* year at *each* school within *each* state). Thus, the very nature and purpose of regression analysis is to *predict* the outcome variable based upon the weighted values of each independent variable. Each of the following data analysis components are explained at length below.

The present study observed a positive skew in the data since ODR data ranged from 0 (i.e., a student has no office referrals all year) to infinity (i.e., if a student has 30 or 50 or 364 office referrals in a year). While this violates the normality assumption underlying parametric statistics, it is commonly remedied with a logarithmic transformation. This type of data transformation sets the 0 to 1, thereby creating a more "normal" distribution by extending all scores between 0 and 1 to the left of the mean. What is more, since a log of 0 cannot be derived, common practice involves converting 0 scores to a score of 0.5. This was conducted in the present study.

Linear Regression

Before describing hierarchal linear modeling, the analysis that was used in the present study, one must understand basic linear regression. While correlation and regression describe relationships between two variables, only regression allows us to identify predictive variables that influence the outcome variable. Look at the linear regression model below (simple regression equation):

$$Y_{ijk} = b_0 + b_1x_1 + e$$

Y_{ijk} = Outcome variable (Dependent variable)

b_0 = Y intercept

b_1x_1 = Change in Y for every 1-unit increase in X (slope)

e = Error term

Here, in this basic linear regression model, one can see that each term in the expression represents something different. To begin, the outcome variable is that which we are interested in predicting (Y_{ijk}; ratio score at measurement occasion i for school j in state *k*). In the present study, we were interested in predicting relative risk ratios of office referrals at different schools across the country. More specifically, the dependent variable is the school‟s annual risk ratio for ODRs for two different student groups (i.e., Hispanic and Black). Thus, each school had two scores for each of the 3 years if they had entered sufficient data; totaling six scores per school. As an example, we could have one school at 1 year with a score of 1.5, which means (in this example) the Hispanic population at that school is 50% more likely than White students to be sent to the office and another school that has a score of .90, means the Hispanic population is sent to the office at similar rates as White students. What made these two schools have different scores? One way in which to study this question is with regression analysis. By entering variables into the regression equation we analyzed which variables best predict the outcome of interest (in this case, the annual school ratio scores).

Treatment and Random Effects

Returning to the equation above, the variables entered into the equation can be grouped by (a) treatment effects and (b) random effects. Intervention effects (i.e., the effects SWPBS has on the outcome variable) begin as “random effects” until they prove

to be significant predictor variables; they are then referred to as "treatment effects." [Please note, insignificant variables are removed from the equation while significant variables remain, thus is the nature of *modeling*.] The error term (in this equation) represents both random effects and real error. Specifically, the error term at this point just includes everything else that could possibly be influencing the outcome variable that is not the intervention (or possibly treatment effect). In order to try and account for more of the remaining error term, more variables were added to the equation in an attempt to reduce the error term. So, in this case, we added demographic variables (e.g., percentage of students who qualify for free and reduced lunch or state location within the U.S.) in an attempt to explain some of the error variance.

At this point the regression equation becomes increasingly more complex. Before adding demographic variables, the intra class correlation is tested for significance. The ICC refers to the difference in the ratio scores between schools. For example, if the ICC was significant, this meant that a significant part of the error (or variance) was due to differences *between* schools. However, without analyzing the effects of school and possible regional differences, there is risk of inflating Type 1 error and violating the independence assumption. Therefore, by testing the ICC for significance and subsequently utilizing a multilevel regression model (i.e., HLM), the present study investigated the nature of the possible relationship between SWPBS and risk ratio scores with more confidence and less error than traditional regression techniques.

Hierarchal Linear Modeling

While the modeling procedure is quite simple using linear regression, it becomes more complex when testing for random effects (i.e., testing to see if the nested nature of

the data set is complicating, thus moderating, the treatment effects). Consider Figure 2.

This figure depicts the nested nature of the data set and first two levels of the multileveled model the present study will utilize. Level 1 (along the bottom of the figure) in the present study was referred to as measurement occasion (since each school had 3 years worth of data). Y represents each Year. The subscript can be read as Y_{11} that is the score for School 1 in Year 1, while Y_{23} represents the score for School 3 in Year 2.

Possible Level Three Effects

After adding Level 2 variables (school-level variables as described in Table 4) into the equation and checking for significance the remaining random variance was evaluated once again. Note: This is the residual variance that still remains after adding variables at Levels 1 and 2.

By adding Level 3 variables, the error term was reduced (or, explained) even more so, which created an even stronger regression model. Level 3 variables for this study included (a) percentage of schools within the state utilizing SWPBS; (b) percentage of schools within the state utilizing the ethnicity report; and, (c) location of the state

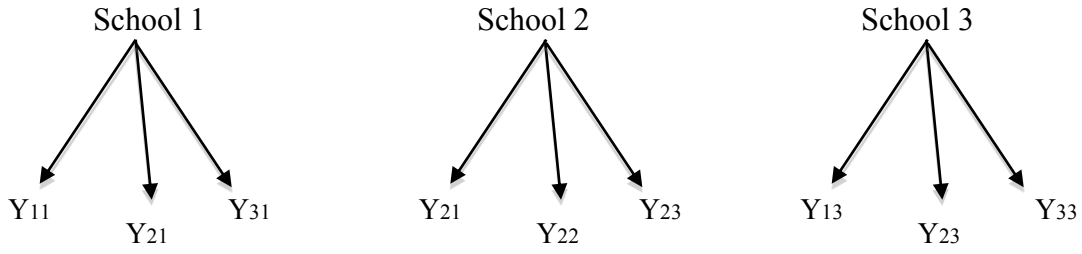

Figure 2: *Levels 1 and 2 in a Multilevel Model*

within the country (i.e., Western region, Eastern, etc.). In this case, the multilevel regression model became three-tiered instead of two-tiered (as shown below in Figure 3).

Multilevel Model Equations

Presented below is an HLM equation similar to that used in the present study at Level 1. As one may notice, this resembles the linear regression model displayed in the previous section.

$$Y = \pi_0 + \pi_1 (\text{Academic Year}) + e$$

Y_{ijk} = Ratio score at time *i* for school *j* in state *k*

π_0 = Y intercept; the mean of the growth curve

π_1 = Slope for Academic Year

e = Error (Unexplained variance)

While the Level 1 equation (shown above) predicts the outcome variable (i.e., risk ratios), the Level 2 equation attempts to explain any differences observed between schools. As such, the Level 2 equation uses π_0 as one of the two outcome variables.

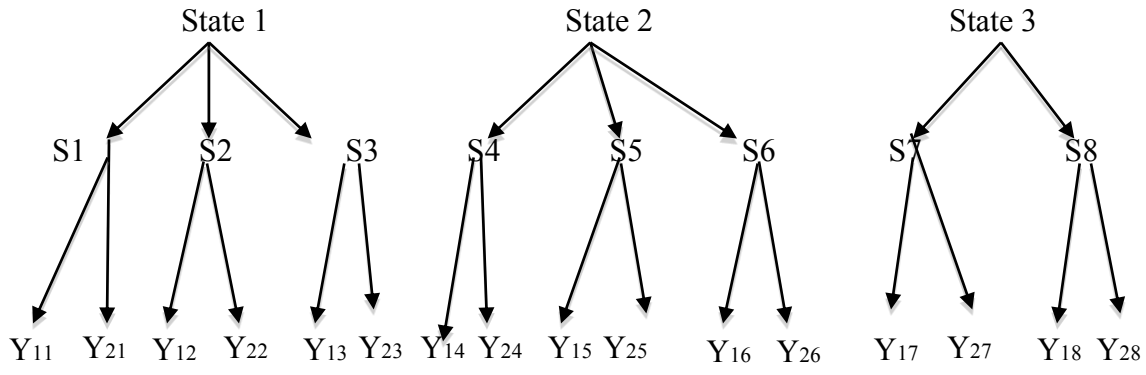

Figure 3: *Three-level Model*

Notice how π_0 becomes the dependent variable in one of the two Level 2 equations and the π_1 becomes the outcome variable in the second of the two Level 2 equations. Since each school provided a π_0 (intercept) and π_0 (slope), there were as many π_0"s as there were schools and as many π_1"s as schools.

$$\pi_0 = \beta_{00} + \beta_{01} (\text{School size}) + r_0$$

$$\pi_1 = \beta_{11} (\text{School Location}) + r_1$$

Here, at the Level 2 equation, independent variables (those listed under Level 2 variables in Table 4) were entered in attempt to explain the difference between schools in intercepts (π_0) and slopes (π_1). Also worth noting, *r* represents random effects yet to be explained, possibly by Level 3 variables. The β coefficients in the Level 2 equations served as outcome variables in the Level 3 equations. For example, there were as many β_{00}"s as there were states; each state provided a β_{00} for a Level 3 equation. There was a separate Level 3 equation for each β coefficient (β_{00}, β_{01} and β_{11}).

Following this, Level 3 variables were entered in an attempt to explain any differences observed between states as shown below. Once again, one can observe the "means as outcomes" feature of using a multilevel model. That is, the differences in states becomes the outcome variable at the next level. In this way, the effect of the nesting variable (i.e., grouping variable, random effect) becomes an outcome variable worthy of our prediction or explanation. This feature of multilevel modeling is reflected in the Level 3 equation.

$$\beta_{00} = \gamma_{000} + \gamma_{001} \text{ (Percentage of schools with SWPBS in the state)}$$

$$+ u_{00}$$

$$\beta_{01} = \gamma_{010} + \gamma_{011} \text{ (Number of years with SWPBS initiative)}$$

$$\beta_{02} = \gamma_{020}$$

To summarize, data files were organized and unnecessary or irrelevant variables in the dataset (i.e., alternative school settings) were removed within SPSS. Next, the data were transformed into logarithmic scale. The data were then uploaded to an HLM software program. The research questions were addressed through hierarchical linear modeling, a sophisticated form of regression analysis that accounts for nesting effects (i.e., random effects).

The modeling began with Level 1 (as basic regression analysis) and the ICC was tested in order to verify the need for further analysis (i.e., entering Level 2 variables). Following this, the random effects at Level 2 were evaluated to determine if it was necessary to include Level 3 variables. When significant reliable variance remained at Level 2, Level 3 variables were entered in an attempt to explain that variance. Finally, final regression equations indicated significant independent variables of interest and their predictive value on school relative risk ratios.

CHAPTER IV

RESULTS

After data were organized and prepared for statistical analyses, two separate three-level HLM models were created. A three-level model for Black students and a three-level model for Hispanic students allowed for a more precise investigation of the research questions. Through careful entry and removal of all a priori independent variables at Levels 1, 2 and 3 (see Table 4), significant predictor variables were identified at the school and state levels as well as three-way interaction effects.

To begin, descriptive statistics were reviewed and parameters of the data sets were evaluated for the major assumptions described in Chapter II (i.e., normality). At Level 1, there were 1, 213 office referrals for Hispanic students and 905 office referrals for Black students over the 3-year period (see Table 5). As shown in Tables 6 and 7, 493 schools were included for the Hispanic student group and 382 schools were included for the Black student group. The schools for the Hispanic student group spanned across 17 states while the schools for the Black student group represented 15 different states. After careful review for normality via Histograms within SPSS, Level 1, 2 and 3 files for both student groups were uploaded as SAS transport files and entered into the HLM software program (Raudenbush et al., 2009; HLM 6.08). From here, the investigation of research questions and modeling procedures commenced.

Table 5: *Mean and Standard Deviation for Level 1 Variables*

Hispanic Student Group *N= 1,213 Referrals*		Black Student Group *N=905 Referrals*	
Mean	SD	Mean	SD
3.93	9.43	4.73	8.47

**All numbers reflect average across three years of data*

Table 6: *Mean and Standard Deviation for Level 2 Predictor Variables*

	Hispanic Student Group *N=493 Schools*		Black Student Group *N=382 Schools*	
	Mean	SD	Mean	SD
% Non-White	42.1	29	47.7	28
% *Free and Reduced Lunch	76	49	81.6	51.6
School Size	496	241	532	248
**School Location	3.4	2	3.0	1.8
***School Grade Level	2.6	.92	2.5	.80
SET Implementation Average	87.3	.10	87.3	.11
SWPBS 80/80 Criterion	.73	.37	.72	.38

**Indicates average percent across three years of data*
***1 = City 2 = Suburb 3 = Town 4 = Rural*
***1 = K-6 2 = 6-9 3 = 9-12 4 = K-12*

Table 7: *Mean and Standard Deviation for Level 3 Predictor Variables*

	Hispanic Student Group *N=17 States*		Black Student Group *N=15 States*	
	Mean	SD	Mean	SD
% *Schools with SWPBS	2.18	1.13	2.07	1.16
% **Schools using Ethnicity Report	2.53	1.11	2.78	.91

**1 = 1-10% 2 = 11-20% 3 = 21-30% 4 = 31-40% 5 = 41-50% 6 = 51-60%*
***1 = 1-20% 2 = 21-40% 3 = 41-60% 4 = 61-80%*

SWPBS Schools and Office Referrals

The null hypothesis was tested in order to address research question #1: *Do schools that implement SWPBS reduce ODR rates?* In order to address this research question, all student groups were included and analyzed using one three-level HLM model. After removing two outlier schools for statistical purposes (Tabachnick & Fidell, 2007) and all schools with less than 10 ODRs entered as their annual total (see Chapter 2), the log of total ODRs was computed for each school and used as the dependent variable for this research question.

At Level 1, "Academic Year" was the only predictor variable and at Level 2 "SWPBS Implementation" was entered as a predictor variable. Results show the slope (or, change over time) was not significantly different from zero t (457) = 0.856, $p < .05$; however, there was significant variance among schools with respect to the intercept χ^2 (361) = 8715.38, $p = .000$ and slope differences χ^2 (374) = 1021.43, $p = .000$. There were also significant level differences detected among states χ^2 (14) = 37.8, $p = .001$. SWPBS Implementation (as measured by SET implementation average and 80/80 criterion) was not found to be a significant predictor for slope or level differences among schools.

Thus, while significant variance was observed, neither time nor SWPBS implementation could explain these differences among schools and states.

SWPBS Implementation and Risk Ratios Scores

The null hypothesis was also tested in order to address research question #2: *Do schools that implement SWPBS reduce risk ratio scores?* In contrast to the previous research question, this research question (as well as all subsequent questions) utilized the log of risk ratio scores as the dependent variable (refer to Figure 1 in Chapter II for calculation). Each student group was tested and run with an empty model (at Level 1) to answer this question.

Hispanic Student Group

For the Hispanic group, fixed effects were detected meaning that the risk ratio scores significantly differed from zero in the level t (16) = 3.471, p = .004 as well as the slope t (15) = 2.919, p = .011. As described in Chapter II, a log transformation was necessary in order to conduct analysis. In order to allow for meaningful interpretation of the log scores, Table 8 provides several converted log scores and their equivalent risk ratio scores. For example, a log score of 0 indicates a risk ratio score of 1.0 (i.e., the minority group is referred to the office at the same rate as White students). The Hispanic student group also yielded significant variability (among schools) in risk ratio scores χ^2 (366) = 2434.71, p = .000. The Chi Square to test for significant differences among schools in the change in risk ratio scores over time also resulted in significant variability χ^2 (400) = 584.29, p = .000. Therefore, significant variability among schools was

Table 8: *Interpretation of Log Scores*

Risk Ratio Score	Log Equivalent
1.0	0
1.5	.176
2	.301
2.5	.398
3	.477

Significant variability was also detected in risk ratio scores among states for the Hispanic student group χ^2 (13) = 102.53, p = .000. However, there were no significant differences among states with respect to the slope of risk ratio scores. In other words, there were significant differences among states but not in their slopes (i.e., their change over time). Moreover, 24.6% of the variance in levels of risk ratios was attributed to differences among schools while 16.7% of the variance in levels was attributed to differences among states.

Black Student Group

For the Black student group, fixed effects indicated that the overall risk ratio scores were significantly different from zero t (14) = 10.828, p = .000; however, the mean slope was not found to significantly differ from zero. On the other hand, results showed schools significantly differed from one another with respect to their overall risk ratio averages χ^2 (290) = 1520.42, $p < .01$ as well as their slopes χ^2 (305) = 458.88, $p < .01$. States were also observed to significantly differ from one another with respect to their level differences χ^2 (14) = 24.87, $p < .05$, but not their slope differences. The variance

components for level and slope differences for the Black student group were as follows. At Level 2, 13.5% of the variance among risk ratio levels could be attributed to school-level factors. As for slope, 1.6% of the differences among schools‟ risk ratio scores could be attributed to school-level factors.

Demographic Factors as Predictive of Risk Ratio Scores

Demographic variables were entered as a group into the HLM modeling program (Raudenbush, et al., 2009) to answer research question #3: *To what extent do demographic factors predict proportionate (or disproportionate) rates of office referrals among racial/ethnic minority students?* Level 3 fixed and random effects were also tested for significance at this time. Following this, non-significant random effects were removed from Level 3 and modeling procedures continued at Level 2 for level differences (c.f., slope differences). After removing non-significant Level 2 demographic variables, SWPBS variables were entered and tested for significance. After testing each SWPBS variable for significance at Level 2 (and their corresponding random effect at Level 3), only significant variables remained for a final model at Level 2. While the modeling procedures began with the intercept (or level) differences (noted in equations as π_0 for Level 2 and β_{00} for Level 3), these modeling procedures for Levels 1, 2 and 3 were repeated to predict slope differences (noted in equations as π_1 for Level 2 and β_{10} for Level 3). Finally, each set of procedures was conducted twice, first for the Hispanic student group, then for the Black student group. As described above, separate analyses were conducted to allow for added precision and information.

Hispanic Students

For the Hispanic student group, four random effects at Level 3 were significant and remained to be modeled following conclusion of Level 2 procedures. Nonsignificant random effects at Level 3 were removed and modeling procedures continued. Of the five demographic variables at Level 2, four were significant for the Hispanic student group (see Table 6); therefore, only School Grade Level was removed from the Level 2 equation for level differences. There were no significant demographic variables found at Level 3.

Continuing with the Hispanic student group, slope was modeled following the conclusion of level differences. At Level 2, the only significant demographic variable was School Size. At Level 3, there were no significant demographic variables (i.e., region) detected. (See Table 9 for final equations.)

Table 10 shows the coefficients for the significant predictor variables for the Hispanic student group. These coefficients tell of the strength and direction of the relationship between the predictor variable and the outcome (or moderating) variable. For example, at Level 2, for every one-unit increase in School Size (e.g., every additional 100 students), the log unit increased by .13. The risk ratio equivalent would be approximately 0.35. In other words, for every 100 students a school increased in size, the risk ratio would increase by approximately 3.5. Therefore, School Size explained significant differences in level and slope among school risk ratio scores.

Black Students

For the Black student group, the same statistical analysis procedures were followed as described above for the Hispanic student group. First, all demographic

Table 9: *Hierarchal Linear Models for Hispanic Student Group*

	Hispanic Student Group *N=493 Schools*
Level 1 Model	$Y = \pi_0 + \pi_1 (\text{Year}) + e$
Level 2 Model	$\pi_0 = \beta_{00} + \beta_{01} (\text{Location}) + \beta_{02} (\text{Free}) + \beta_{03} (\text{Size}) + \beta_{04} (\% \text{ Nonwhite}) + r_0$ $\pi_1 = \beta_{11} (\text{Size}) + r_1$
Level 3 Model	$\beta_{00} = \gamma_{000} + u_{00}$ $\beta_{01} = \gamma_{010}$ $\beta_{02} = \gamma_{020}$ $\beta_{03} = \gamma_{030} + \gamma_{031} (\% \text{ SWPBS}) + u_{03}$ $\beta_{04} = \gamma_{040} + u_{04}$ $\beta_{11} = \gamma_{110} + \gamma_{111} (\% \text{ Ethnicity}) + u_{11}$

variables were entered into the model at Level 2. School location, Table Percentage Free-and Reduced Lunch and School Size all significantly predicted level differences at Level 2 for the Black student group. None of these significant predictor variables at Level 2 yielded significant random effects at Level 3; therefore, were not modeled at Level 3. Finally, similar to the Hispanic student group, there was no significant Level 3 demographic variable found.

Table 10: *Fixed Effects for Hispanic Student Group (Levels 2 and 3)*

Fixed Effect	Coefficient	Standard Error	P-Value
γ_{000}	.288597	.083155	.004
γ_{010}	.029628	.012306	.017
γ_{020}	-.000508	.000212	.017
γ_{030}	.001301	.000348	.002
γ_{031}	-.000238	.000099	.031
γ_{040}	-1.009338	.208009	.000
γ_{110}	0.000989	0.000339	.011
γ_{111}	-.000225	.000093	.029

differences); none of the demographic variables were found to be significant predictors at Level 2 or 3. (See Table 11 for final equations.)

Table 12 shows the coefficients for the significant predictor variables for the Black student group. For example, at Level 2, for every one-unit decrease in School Location (as the city became smaller and more rural), the log unit increased by .023, which equates to a risk ratio increase of approximately 0.06.

SWPBS Factors as Predictive of Risk Ratio Scores

SWPBS variables were entered after the demographic variables (as described above) into the HLM modeling program to answer research question #4: *To what extent*

Table 11: *Hierarchal Liner Models for Black Student Group*

	Black Student Group *N=382 Schools*
Level 1 Model	$Y = \pi_0 + \pi_1 (Year) + e$
Level 2 Model	$\pi_0 = \beta_{00} + \beta_{01} (Location) + \beta_{02} (Free) + \beta_{03} (Size) + r_0$ $\pi_1 = r_1$
Level 3 Model	$\beta_{00} = \gamma_{000} + u_{00}$ $\beta_{01} = \gamma_{010}$ $\beta_{02} = \gamma_{020}$ $\beta_{03} = \gamma_{030}$

Table 12: *Fixed Effects for Black Student Group*

Fixed Effect	Coefficient	Standard Error	P-Value
γ_{000}	.394510	.036434	.000
γ_{010}	-.023982	.011687	.041
γ_{020}	-.000652	.000138	.000
γ_{030}	.000273	.000084	.002

do School-wide Positive Behavior Support factors predict proportionate (or disproportionate) rates of office referrals among racial/ethnic minority students? Unlike the demographic variables, SWPBS variables were entered according to a priori decisions. SWPBS variables were entered (and removed if found to be insignificant) in the following order: (a) SET implementation average; (b) 80/80 criterion met; (c) SET subcomponent scores A and B (together first, then one at a time); then, (d) SET subcomponent scores C-G (May et al., 2004). Level 3 random effects were also tested for significance of each variable at the same time the variable was being tested for significance at Level 2. If the Level 3 random effect was nonsignificant, it was removed and run again for significance at Level 2 only.

SWPBS Factors and Hispanic Student Groups

For the Hispanic student group, four random effects at Level 3 were significant and were modeled following the conclusion of Level 2 procedures. Again, nonsignificant random effects at Level 3 were removed and modeling procedures continued. None of the eight SWPBS variables were significant for the level differences observed for the Hispanic student group at Level 2; however, at Level 3, Percentage of Schools with SWPBS was found to significantly moderate the effect School Size had on level differences observed at Level 2, t (15) = -2.383, p = .031. As noted in Table 9, for every one-unit increase in Percentage utilizing SWPBS (i.e., for every 10% increase in the number of schools within a given state utilizing SWPBS) the steepness of the slope (for School Size) decreased by .024 log units. Thus, the presence of SWPBS within a given state mitigated the effects School Size had on risk ratios scores.

Slope was modeled following the conclusion of level differences. At Level 2, there were no significant SWPBS predictor variables detected but Percentage of Schools utilizing Ethnicity Report significantly moderated the effect School Size had on slope differences at Level 2, t (15) = -2.411, p = .029. Similar to the effects Percentage of SWPBS schools had on School Size, the Percentage of Schools utilizing Ethnicity Reports mitigated the effects School Size had on risk ratio scores; such that, for every one-unit increase in Percentage of Schools Utilizing Ethnicity Reports (for every 20% increase in the state); the steepness of the slope for School Size decreased by .022 log units. Though no significant SWPBS variables were predictive of risk ratio scores at Level 2, two Level 3-SWPBS factors weakened some negative effects from demographic variables at Level 2.

SWPBS Factors and Black Student Groups

For the Black student group, analysis procedures were the same as described above for the Hispanic student group. SWPBS variables were entered and removed in the same order as described above. After modeling for level and slope differences, none of the SWPBS variables at either Level 2 or 3 were found to be significant predictors of risk ratio scores for Black students.

SWPBS Factors versus Demographic Factors

Finally, demographic variables were compared with SWPBS variables in order to evaluate research question #5: *To what extent do SWPBS factors predict proportionate (or disproportionate) rates of office referrals among racial/ethnic minority students above and beyond school demographic factors?* In terms of comparing the relative

predictive value each set of variables (i.e., Demographic or SWPBS) had on the changes in risk ratio scores in level and across time, coefficients for fixed and random effects were reviewed. Overall, there were several demographic variables found to be significant at Level 2 for both student groups and zero significant variables observed at Level 3. On the other hand, there was no significant SWPBS-predictor variable identified at Level 2 for either student group while two significant moderating variables (i.e., Percentage of Schools implementing SWPBS; Percentage of Schools utilizing Ethnicity Reports) were identified at Level 3 for the Hispanic student group (See Tables 9 and 10).

To conclude, while very few SWPBS variables were included in the final regression equations, the moderating effects of the Level 3-SWPBS variables were significant for the Hispanic student group. Significant remaining variance (for both student groups) remained at Levels 2 and 3 and was not explained by the predictor variables measured by the present study.

CHAPTER V

DISCUSSION

The present study attempted to replicate and extend prior research conceptually and methodologically. Until recently, studies related to disproportional trends for racial/ethnic minority students mainly focused on defining the problem. Descriptive reports have shown that the discipline gap (as described in Chapter I) is long-standing and clearly in need of attention (e.g., Gordon, Piana & Keleher, 2000; Harvard Civil Rights Project, 2000). Following this, several reports evaluated the negative outcomes associated with zero tolerance policies, which was the federal governments' first attempt at narrowing the discipline gap (Skiba, 2000; 2006; Skiba & Peterson, 2000). For the past 10 years, universal level supports within SWPBS have been the source of several beneficial changes in schools across the country including: (a) reduced problem behavior; (b) improved school climate; and as a result, (c) increased school safety (Sugai & Horner, 2008; 2006). For these reasons, as well as conceptual fit with culturally responsive theory, several scholars have recently suggested that SWPBS is an intervention that may likely positively impact disproportional trends in disciplinary action among racial/ethnic minority students (e.g., Cartledge & Kourea, 2008; Duda & Utley, 2005; Vincent et al., 2011). This study sought to explore this proposed relationship and investigate research questions using a sophisticated statistical approach, which takes into account the nested nature of educational data (i.e., the grouping effects). Specifically, this chapter will

present the results from the present study in the context of (a) the research questions, (b) prior research and (c) the variant analysis procedures.

Evaluating SWPBS using HLM Procedures

Prior research has provided us with clear and consistent results; SWPBS implementation at the universal level is associated with reductions in problem behavior (e.g., Sugai & Horner, 2006; 2008). Several case study reports (e.g., LeBlanc, Swisher, Vitaro & Tremblay, 2008) as well as large-scale research reports (e.g., Irvin, et al., 2004) have built evidence in support of the relationship between SWPBS implementation and improved social behavior at a given school (e.g., Sugai & Horner, 2008; 2006). The present study first evaluated the nature of this relationship using HLM analysis procedures. Mainly, this study sought to replicate these findings when accounting for the nested nature of the data set. In other words, because years of SWPBS implementation are *nested* within a school; schools are nested within districts, and districts are nested within states; these "nests" must be factored into the analysis. This is the sole purpose of utilizing hierarchal linear modeling in place of traditional statistical approaches to research (Raudenbush & Bryk, 2002). By measuring and explaining the effects the "nests" had on the outcome measure (in this case ODR annual totals then risk ratio scores), the present study utilized rigorous statistics so as not to inflate Type 1 error and detect a significant relationship that was not present.

With that, the present study offers contradicting results to that of previous research. Office referrals did not show a significant decrease over time, even when accounting for SWPBS implementation levels (as measured by the SET; Sugai et al., 2001). These results suggest that not all SWPBS schools decrease ODRs over time; and

universal level of supports within SWPBS may not be the primary factor that explains the differences between schools that are reducing ODRs each year and those that are not. Again, by utilizing HLM procedures, the present study accounted for school and state-level differences and did not observe a significant decrease in ODRs over time (cf., Erwin, Schaughency, Goodman, McGlichey & Mathews, 2006).

Several scholarly fields have experienced confounding results such as those found in this study after the adoption and use of HLM procedures and analysis. It is not uncommon for researchers to replicate their studies using HLM in an effort to ensure Type 1 error was not inflated, thus falsely claiming something was effective when in fact, it was not. For example, in the field of counseling psychology, HLM procedures have been utilized to evaluate long-standing therapeutic approaches. HLM results indicated that in fact, approaches were effective only when certain counselor attributes were present (e.g., Burlingame, Kircher & Taylor, 1994; Crits-Christof & Mintz, 1991). The present study"s contradictory results may require SWPBS researchers to begin utilizing HLM procedures and analyses. In general, educational researchers should shift to using HLM procedures since teachers, classrooms, schools, districts and states could all be considered "nests" and be may serving as a moderating variables between the independent and dependent variables of interest (Raudenbush, & Bryk, 2002).

To clarify, while SPWBS was not found to be a significant predictor of reduced ODR rates overall; this does not imply that SWPBS is not working effectively in some schools. The results presented here simply indicate that the present study failed to find evidence that SWPBS, (on average and for the schools within the present sample), has effectively reduced problem behavior for some schools while not for others. These

results should lead future researchers to explore which moderating variables (school or state-level attributes) account for this difference in outcomes across schools.

Overall Risk Ratio Scores

Prior research gave some indication that ODR rates may be decreasing across different student groups within SWPBS schools. For example, Vincent, Cartledge, May and Tobin (2009) reported that major ODR rates decrease among different racial/ethnic student groups within elementary schools that are also decreasing their total annual ODR rates. While this informal report yielded preliminary findings, the present study calculated relative risk ratio scores; a distinctive yet recommended approach to measuring disproportionality. As previously described, the relative risk ratio score allows for a comparison (in rate) to the majority student group (i.e., White students). As Skiba et al. (2008) have recommended, risk ratio scores more accurately represent the equity, or fairness, within a given school (c.f., composite indices). While risk ratio scores may be used to compare equity in student groups on a variety of measures (such as academic achievement or after-school program participation), the present study calculated risk ratio scores for ODRs. What follows is a description of results to the second research question centered on overall risks ratio scores (for ODRs) among Hispanic and Black student groups.

Hispanic Student Group

The current study found a significant decrease over time in risk ratio scores for Hispanic students but not for Black students. This means that, without accounting for any other factors (demographic or SWPBS), Hispanic students‟ risk levels improved over

the 3-year time span. Prior research shows inconsistency in outcomes for Hispanic students; specifically, while some schools (especially at the elementary level) actually show Hispanic students to be at a lesser risk than White students for being referred to the office for disciplinary problems; other schools (especially at the middle school level) show Hispanic students at a greater risk (e.g., Skiba et al., 2011). The findings presented here coincide with prior trends indicating that Hispanic students do not experience as great of a risk as Black students and their relative risk ratio, when compared to White students, varies according to the school, district or state-level attributes. These school and state-level differences will be explained more below.

Black Student Group

While Hispanic students experienced an overall reduction in office referrals for the given 3-year period, Black students‟ risk of being referred to the office (as compared to White students) remained the same. This stable slope over time showed that, overall, risk of receiving an ODR remained extremely high for Black students for the entire 3-year period. On average, Black students were over-referred to the office (as compared to White counterparts) more than 6 times as often. Unfortunately, this finding corresponds with that of prior research such that Black students are consistently at greater risk for disciplinary action leading to poor social outcomes for African American students (e.g., Bradshaw, O‟Brien & Leaf, 2010; Gregory & Thompson, 2010; Skiba, 2000; 2006; Skiba et al., 2011).

Though no significant changes over time were observed for the Black student group, it is important to note that there was also significant variability found among schools with regard to this trend (for both Black and Hispanic student groups). This

means that some schools worsened, increasing risk for Black students over time; but other schools improved over time. In fact, for both Hispanic and Black student groups, schools differed significantly in whether or not the risk ratios increased or decreased over the 3-year period (this is why the *average* of all schools‟ slopes was 0). While traditional statistical approaches are limited in the investigation of explaining differences among schools, HLM analysis procedures helped to explore which factors could explain these differences observed among schools. Both demographic and SWPBS variables were then analyzed as explanatory variables, that is, they were tested to see how well they could explain these differences seen across schools.

Demographic Influence on Risk Ratio Scores

The present study tested two different sets of independent variables and compared them on the basis of their relative predictive value on risk ratio scores for office discipline referrals. These two sets of variables were demographic and SWPBS factors. Demographic variables were considered “control” variables or “constants.” For example, we typically do not have as much control over where a school is located yet we do have control over a school‟s change in discipline policy and practice (i.e., SWPBS). SWPBS variables were of most interest, not only because policy and practice assumes more control over this variable but also since the primary investigative questions are centered on evaluating the nature and extent to which SWPBS explains whether or not a school was able to positively impact disproportional trends in discipline (i.e., as measured by a decrease in risk ratio scores).

Hispanic Students

Although some demographic variables significantly predicted risk ratio scores, these variables differed among the two student groups. For Hispanic students, the following demographic variables were found to be significant: (a) school location (i.e., city size and type), (b) student income-leve,l (c) school size, and (d) the student population (i.e., number of White/non-White students). Schools that were located in smaller cities (e.g., suburban, rural communities) were more likely to have higher risk ratios for Hispanic students. Larger schools were also more likely to have higher risk ratios for Hispanic students. The higher the school income-level (i.e., lower percentage of students who qualify for Free and Reduced Lunch) the higher the risk for Hispanic students. Finally, the percentage of non-White students adversely affected outcomes for Hispanic students such that higher percentages of White students indicated a higher likelihood of observed over-referral rates for Hispanic students. Thus, wealthier, larger schools with small numbers of minority students located outside of urban areas proved to have higher risk ratios for Hispanic students. A summary of the results for the Black student group is presented below followed by an interpretation of these results in the context of previous research.

Black Students

Results were similar yet not exactly the same for Black students. Similar results were found for school location, school size and student income-level. When a school was located in a less urban area (i.e., smaller, more rural towns), Black students were disciplined more frequently than their White counterparts. Larger schools also proved to have worse outcomes for Black students. Also, the smaller percentage of students who

are considered lower socioeconomic status (SES; i.e., higher student income level) adversely affected risk ratio scores for Black students. In other words, wealthier, larger schools located on the outskirts of urban areas proved to have higher risk ratios for Black students.

Previous research in this area is somewhat limited as the current study‟s results provide somewhat unique information. Skiba et al. (2011) did find that while frequencies of office referrals are higher in urban districts, the relative risk ratios (i.e., the discrepancies among minority and White students) are greater in wealthier, suburban districts. The results found in the current study coincide with that of previous research in that wealthier schools located outside of urban areas are more likely to experience disproportional trends in discipline. This study goes further in claiming that these demographic variables significantly explain the differences observed in SWPBS schools‟ risk ratio scores.

SWPBS Influence on Risk Ratio Scores

In addition to evaluating the role demographic factors play in outcomes for racial/ethnic minority students, this study also sought to determine if SWPBS factors accounted for some of the differences noted across schools and/or states. As noted earlier, prior research is especially limited in this regard as differences across SWPBS schools had yet to be explained or measured prior to this study. Though several scholars have suggested SWPBS is an intervention likely of reducing discrepancies in disciplinary action (e.g., Cartledge & Kourea, 2008), empirical research had yet to investigate this question.

The results of the current study show that none of the SWPBS school-level variables were found to improve disproportional trends. In other words, universal level supports within SWPBS (as measured by the SET; Sugai et al., 2001) did not predict or explain the differences in SWPBS schools‟ risk ratio scores. However, two interaction effects were observed from SWPBS variables at the state-level. Due to the three-level nature of the model, fixed effects at the state-level are interpreted slightly differently from the school-level. While at the school-level, we interpret significant predictor variables to directly impact or explain differences observed between schools; at the state-level, significant variables mitigate effects for schools. More specifically, a state‟s use of ethnicity reports positively moderated effects that school size had on slope (the rate at which the risk ratios worsened or improved over time). In other words, though Hispanic students were more likely to be referred than whites at larger schools, within a state that had numerous schools utilizing ethnicity reports from SWIS at least three times annually (e.g., 40% of schools within the state), the observed negative effect of school size weakened. So, a state‟s use of these reports helped to remedy the poor outcomes for Hispanic students at larger schools.

A second state-level SWPBS variable of significance was found in a state‟s percentage of schools implementing SWPBS. Similar to the effect of using the ethnicity reports, this state-level characteristic moderated (or mitigated) the negative effects school size had on the average risk ratios. Specifically, states with a high percentage of schools implementing SWPBS (e.g., 40% of schools within the state) weakened the negative effect school size had on risk ratio scores. Thus, two SWPBS state-level characteristics positively influenced some of the negative effects school size had on risk ratio scores for

Hispanic students. It is important to note that these same effects at the state-level were not observed among Black students. Unfortunately, for Black students, none of the SWPBS variables at either the school or state-level impacted their risk of being over-referred for disciplinary action as compared to White students.

Previous research has shown that state-level policy and practice can vary significantly and greatly impact student outcomes (Burdette, 2007; Hebbeler et al., 1999; Markowitz, 2002). Prior to this study, state-level SWPBS practices had yet to be investigated in relation to their potential influence on risk ratio scores for minority students. One the other hand, state-level zero tolerance practices have been substantially documented over time as having devastating effects on students within that state or U.S. region (Harvard Civil Rights Project, 2000; Skiba, 2000; 2006; Zhang et al., 2004). The present study offers some positive feedback to state-level practitioners and SWPBS TA-Center representatives such that the amount of SWPBS implementation occurring throughout a state is observed to have positive outcomes for Hispanic students attending larger schools. Similarly, the ethnicity report feature within SWIS, when utilized, seems to also have some added benefit for Hispanic students attending larger schools. These two variables combined may indicate that, in general, the level of SWPBS commitment within a given state is narrowing the discipline gap for some students at some schools.

Even with these marginally positive results, SWPBS implications for research and practice should involve reconsideration to the notion that SWPBS is an equitable intervention solely capable of addressing the discipline gap in this country. Scholars and practitioners alike have deemed SWPBS worthy of our attention and implementation (to help reduce the discipline gap) in U.S. schools for the past 10 years (e.g., Cartledge &

Kourea, 2008), yet this belief does not hold true with these results. Based on this study, SWPBS is not accounting for the difference observed among schools that are improving risk for minority students and schools that are worsening outcomes for these students. The present study simply implies that SWPBS universal level of supports (as measured by the SET; Sugai et al., 2001) is not the reason some schools improve outcomes for all students.

SWPBS versus Demographic Factors

Overall, results verify that demographic factors have a greater impact on relative risk ratio scores than do SWPBS factors. At the school level, for both Black and Hispanic student groups, none of the SWPBS variables significantly explained the differences in school outcomes on the basis of risk ratio scores. On the other hand, demographic variables (i.e., those factors for which we have little control) did significantly explain the differences observed among schools. While limited in scope, these results tell us that SWPBS is not having the kind of impact many scholars predicted in terms of improving equity in a school"s approach to discipline. SWPBS may lend itself to reducing problem behavior in schools; however, this study"s results suggest that these positive outcomes are not being experienced consistently across all student groups.

So, why did some schools improve risk ratio scores with the adoption of SWPBS while other schools worsened? Perhaps those SWPBS schools that successfully reduced discrepancies modified the approach in some way or had additional policies or practices in place. For example, one case study reported that SWPBS implementation on an American Indian reservation in New Mexico showed little impact without cultural modification. After integrating cultural components (aligned to student, family and

community belief systems), SWPBS universal level supports‟ effectiveness significantly increased (Jones et al., 2006).

Prior research, while limited to case studies, supports the present study findings: SWPBS universal level of support is not (in and of itself) responsible for improving risks for minority students. Cultural components (e.g., integration of culturally-appropriate practices) are most likely needed to supplement the SWPBS approach (Schumann, 2010; Vincent et al., 2011). Additionally, measures such as the SET (and alternative fidelity measures for SWPBS) should reflect the importance of this cultural element. For example, the Monitoring and Decision-Making subcomponent of the SET could have "prints and uses ethnicity reports regularly" as an added criteria. The development and teaching of school-wide behavioral expectations may also have added criteria such as "defining and teaching of expectations match community belief systems." Future research efforts are expected to continue investigating these questions and are outlined in more detail following a discussion of study limitations.

Study Limitations

Missing Data

As with any research study, results should be interpreted with certain limitations in mind. Relative risk ratios were calculated using both student variables and ODR rates at a given school. Specifically, in order to include an ODR into the school‟s overall risk ratio score for a given year, the ODR needed to also indicate the racial/ethnic background of the student. With that, the data set does not include schools that consistently (a) chose not to enter ODR information and/or (b) chose not to record the student racial/ethnic

background. Therefore, results from this study rely upon a given schools‟ consistency and accuracy in their record of the ODR information.

Prior state and federal reports attempting to collect this type of disaggregate information (i.e., school and state outcomes broken down by race/ethnicity), also found significant missing data and call for improved data collection efforts (e.g., Markowitz, 2002). On the other hand, rigorous training as well as frequent updates and ongoing improvements distinguish SWIS as a reliable system of tracking and recording problem behavior at the school level (May et al., 2003). With that, SWIS could be improved to require all student information (i.e., racial/ethnic background) be completed upon the entry of each office referral. For example, the program could necessitate office staff to ensure all information is complete before the office referral is entered into the system.

Student Representation

Finally, including only two minority student groups limits the nature and extent to which we may state that the previously described results apply to all minority student groups. While Hispanic and Black students remain the largest groups considered to be "minority," there is certainly one student group which has experienced even higher rates of office referrals, school dropout, suspension, expulsion and special education referral (e.g., Krezmien, Leone & Achilles, 2006; U.S. Department of Education, 2009). Native American students are considered to be one of the most at-risk student groups (U.S. Department of Education, 2009) within the United States and their exclusion within the present study, due to low numbers, calls for remediation and priority for future research.

School and State Representation

Schools and states were unable to participate in this study if they were not concurrently: (a) using SWIS and (b) entering SET information into the *PBS Surveys* database. First, this study only included schools that use SWIS as their primary data tracking system for ODRs. Several states and schools that use other data tracking systems (such as Educators Handbook or Discipline Tracker) were unable to participate in this study. With that, because the adoption and use of SWIS is often a state-level decision, certain states were also not represented. A second limiting factor to participation was the PBS surveys inclusion criteria. Approximately 20% of all SWPBS schools voluntarily entered their implementation information (i.e., SET scores) into this data collection system. This low rate of data entry leads to obvious limitations, which lends itself to some bias and should be kept in mind when interpreting results (Fowler, 2009).

Implications for Future Research

Employ HLM Analysis and Procedures

As previously explained, utilizing HLM procedures and analyses can dramatically change study outcomes (e.g., Crits-Christof & Mintz, 1991). Before SWPBS researchers go further in their exploration of "what works," they should ensure they are utilizing the most rigorous and advanced methodologies and analysis procedures. Given that the present study (which utilized HLM procedures) revealed confounding results to that of previous research (which used traditional statistical procedures), future research should attempt to replicate additional SWPBS studies. Due to the nested nature of educational research, even randomized-treatment studies cannot fully account for possible grouping

effects especially if the N is minimal (Raudenbush, & Bryk, 2002). In order to ensure research efforts build on a solid foundation both theoretically and empirically, scholarly journals should require researchers to employ the most advanced methodologies and statistical procedures.

Explore Additional SWPBS Variables

Several SWPBS variables, which were not included or investigated in the present study, could potentially have positive influence on disproportional trends in discipline. For example, effective targeted and/or individualized interventions at a given school could potentially explain differences observed among schools (e.g., Vincent, Tobin, Hawken & Frank, in press). Given the effectiveness of secondary and tertiary-level supports within SWPBS, schools that utilize these systems of support tend to reduce office referral frequency for some of these students who are disciplined at higher rates than most students (e.g., Crone, Hawken & Horner, 2010; Scott et al., 2010).

Adjust SWPBS Focus

Given the magnitude and severity of the disparate outcomes in disciplinary action for racial/ethnic minority students across the country (e.g., Bradshaw, O'Brien & Leaf, 2010; Skiba et al., 2011), providers of SWPBS have a responsibility to attend and accommodate the intervention to addressing the needs of all students. Instead of focusing primarily on implementation fidelity (i.e., the idea that the approach needs to be implemented exactly as designed) and measuring general outcomes (i.e., overall reduction in ODR rates), SWPBS implementation efforts should focus on meeting the needs of and measuring the outcomes for all students within a given school. The

outcome measures need to incorporate a stronger focus on reducing the discipline gap. This means that risk ratios (of office referrals, suspensions, expulsions) should be as important if not more important to evaluate than overall reduction of disciplinary action. Finally, the fidelity measures associated with SWPBS implementation should be modified to include and emphasize a consistent focus on responding to the cultural, linguistic and economic diversity within a given school. These shifts will help to create a more equitable intervention for all students‟ success (Schumann, 2010; Vincent et al., 2011; Vincent, Swain-Bradway, Tobin & May, 2011).

Why did some schools have success reducing disproportional trends while others failed? As evidenced by the results in this study, successful schools across the country are already answering this important question. As researchers, we need to identify these schools that are experiencing success in creating equitable, positive outcomes for all students. Once identified, exploration and observation is needed to document all critical variables associated with this kind of success. What SWPBS variables are critical to the reduction of risk among racial/ethnic minority students? What kind of school climate is created and by what means? How are SWPBS teams using their data and what attitudes do they carry with the detection of disparate outcomes? How is culturally responsive pedagogy inherent throughout classroom management, the development of school-wide expectations and the selection of secondary and tertiary-level interventions? Future efforts should continue the search of what is already working in some schools so as to replicate these positive outcomes for all SWPBS schools.

Implications for Practice

As implied in the previous section, practitioners understand that positive outcomes do not occur in isolation. School systems are complex and dynamic, always integrating multiple approaches to school improvement at once. With the adoption of SWPBS (or if already in place) the results from this study suggest that culturally responsive practices are an inherent feature needed to supplement this approach to discipline. We know that SWPBS brings a reduction in problem behavior; however, with this study, we also know that additional practices at the school level are needed if SWPBS will impact all students.

One recommendation may be to integrate Geneva Gay"s (2002) ideas of community, communication and care into the school-change process. If each classroom embodied a community-learning atmosphere where differences in communication style were valued and respected and where teachers frequently create caring relationships with students and families, schools may experience the kind of success that some schools are already having with students from different racial and ethnic backgrounds. As Bradshaw, O"Brien and Leaf (2010) recently illustrated, the racial background of the teacher is not necessarily the critical element here. We do know that teachers perceive the same students and same behaviors differently depending on their own personal lens (Gregory & Thompson, 2010). Educators need to evaluate their own beliefs about their students and work to ensure that students are being treated fairly in the classroom.

At the state level, results from this study match with that of previous research to show that over-representation of minority students is not just an inner-city problem (i.e., U.S. Department of Education, 2004). These results show that wide gaps in disciplinary

action are experienced at even higher rates in White, suburban, wealthier schools while overall trends are significantly worse for Black students. What is more, a state‟s use of ethnicity reports and their level of involvement with SWPBS implementation does appear to be improving outcomes for students within a given state. Therefore, all states should continue to track and problem-solve risk ratio discrepancies in office referrals and consider utilizing similar procedures to evaluate equity in suspension, expulsion and dropout rates as well as academic achievement.

Conclusion

If SWPBS were to be an equitable, culturally appropriate intervention for minority students, we would most likely see reductions at similar rates in office referrals, suspensions, expulsions, and dropouts. However, if SWPBS is an intervention significantly assisting White student groups over others, we are systematically increasing Black, Hispanic or other minority students‟ risk of being referred to the office. While debate continues over whether ODRs accurately measure all problem behavior within a given school (e.g., Wright & Dusek, 1998), it is clear that frequent ODRs increase risk of further punitive consequences (e.g., Tobin & Sugai, 1999). Thus, reducing office referral rates among at-risk student group populations is imperative to prevent further widening of the discipline gap in U.S. schools.

Prior to this study, investigating the claim that SWPBS as a possible solution to decrease discipline discrepancies was limited to case study examples and conceptual theory (e.g., Cartledge & Kourea, 2008; Jones, Caravaca, Cizek, Horner & Vincent, 2006). Researchers claimed SWPBS to be a superior approach to discipline when compared to the previous push for zero tolerance policies. SWPBS is more effective than

traditional punitive measures (Skiba & Rausch, 2006). However, just as Jones et al. (2006) found, if SWPBS is left as is, without cultural modification, minority students at some SWPBS schools are excluded from the gains other SWPBS schools celebrate. Only with a concerted effort to modify and accommodate the approach to respond and integrate cultural differences within a given school will these SWPBS schools start to reduce problem behavior across all students. While some have called SWPBS an intervention likely of having a positive impact on minority students, the results from this study clearly call into question the assumption that SWPBS universal level of support is solely responsible for benefiting students of color at similar rates as White students. Ultimately, a paradigmatic shift is required for SWPBS to become, not just an effective approach to school-wide discipline, but an equitable one, providing positive outcomes not just for some students, but all students.

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